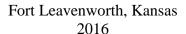FOSTERING CREATIVE THINKING IN THE INSTITUTIONAL ARMY

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE
Strategic Studies

by

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

FOSTERING CREATIVE THINKING IN THE INSTITUTIONAL ARMY, by Major Nicholas J. Hitt, 87 pages.

The United States military leadership, more specifically the US Army, identified developing creative thinkers as an essential component to the concept of winning in a complex world. This is the case because the complexity of the security environment requires agile and adaptive leaders. In order to indoctrinate creative thinking across the force, the Army must leverage professional military education from its institutional side. Of the institution programs, the resident Command and General Staff Officer Course educates the largest body of field grade officers at one time. Thus several questions arise: Does CGSOC foster creative thinking in its resident students? What are the critical factors in fostering creative thinking? How does CGSC use doctrine, organizational structure, training, leadership development and education, personnel, facilities, and policies foster creative thinking? These questions will be explored along with a recommendation of an approach to evaluate how organizations foster creative thinking.

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ACRONYMS

ADM	Army Design Methodology
AER	Academic Evaluation Report
AOC	Army Operating Concept
ARCIC	United States Army Capabilities Integration Center
ASI	Additional Skill Identifier
CCJO	Capstone Concept for Joint Operations
CGSC	Command and General Staff College
CGSOC	Command and General Staff Officer Course
CGSS	Command and General Staff School
DCL	Department of Command and Leadership
DJIMO	Department of Joint, Interagency, and Multinational Operations
DLRO	Department of Logistics and Resource Operations
DMH	Department of Military History
DOTMLPF	Doctrine, Organizations, Training, Materiel, Leadership and Education, Personnel, and Facilities
DOTMLPF-P	Doctrine, Organizations, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy
DTAC	Department of Tactics
ELM	Experiential Learning Model
FDP	Faculty Development Program
GAAT	Georgia, Armenia, Azerbaijan, and Turkey
ILE	Intermediate Level Education
JOPP	Joint Operation Planning Process
JPME	Joint Professional Military Education

LRC   Learning Resource Center

MDMP   Military Decision Making Process

MMAS   Masters in Military Arts and Science

MOS   Military Occupation Specialty

OES   Officer Education System

SGA   Staff Group Advisor

TRADOC   Training and Doctrine Command

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CHAPTER 1

INTRODUCTION

Overview

Innovation is critical, both for the operational and the institutional Army; and the
Army Operating Concept is a beginning point for the innovation we need to
ensure that our Soldiers, leaders, and teams are prepared to win in a complex
world.

— General Raymond T. Odierno, *Army Operating Concept*

The *Army Operating Concept* developed at least in part from the *Capstone
Concept for Joint Operations: Joint Force 2020* (CCJO 2020). The *CCJO 2020* captures
the future security environment as complex and unpredictable with adaptable adversaries
all changing at a high speed and requiring quick reaction (Joint Chiefs of Staff 2012, 1-
3). Out of this capstone concept came a globally integrated operations concept for how
the Joint Force should operate in this new environment. "[Globally integrated operations]
requires a globally postured Joint Force to quickly combine capabilities with itself and
mission partners across domains, echelons, geographic boundaries, and organizational
affiliations" (Joint Chiefs of Staff 2012, 4).

Within the globally integrated operations concept, three of the eight elements
require creative thinking directly or indirectly through adaptive thinking. The first
element, mission command, "exploits the human element in joint operations,
emphasizing trust, force of will, intuitive judgment, and creativity, among other traits"
(Joint Chiefs of Staff 2012, 4). The second element, global agility requires the joint force
to be almost fluid in nature; in which forces can be established, disestablished, or
adjusted as the environment, mission, or requirements changes (Joint Chiefs of Staff

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2012, 5). The last element, flexibility, requires non-traditional mutually supporting organizations that can focus specifically on a security challenge (Joint Chiefs of Staff 2012, 6).

In total, the CCJO 2020 is dependent upon an adaptable joint force that can match the tempo of the environment and potential adversaries. The U.S. Army responded to this concept with multiple actions. These actions came in the form of analysis and guidance directly from the Army Chief of Staff, Training and Doctrine Command (TRADOC) and the United States Army Capabilities Integration Center (ARCIC).

General Raymond Odierno fully recognized the importance of adaptable leadership along with creative thinking by holding Solarium 2014. Solarium 2014 was a conference with the purpose to provide bottom up feedback to the Army Chief of Staff and enable change in the US Army. Here he directed about 100 junior officers to research and collaborate on the Army's current issues and then make recommendations.

The solarium highlighted important concepts related to creative thinking. First, a co-author of *The Starfish and the Spider*, Ori Brafman, briefed at the event that changing an organization requires "creating an environment that breeds innovation" (Wren 2014, 15). This supports the requirement for the Army to create and maintain a climate that facilitates creative thought. As William Wren also commented that "the Army must enable a culture that allows junior leaders to develop innovative solutions to complex problems and provide a forum to express those ideas to senior leaders within the profession" (Wren 2014, 15). One of the results from the participants' research was that the Army needed to develop both agile units and Soldiers. In the next conference, 2015

Solarium, one of the group's focused efforts was on how to develop agile and adaptive leaders, which is one of ARCIC's Army Warfighting Challenges.

<p style="text-align:center">The Case for Fostering Creative Thinking at CGSOC</p>

This exceedingly complex world enables highly adaptive enemies to exploit established countries' weaknesses. The competitive advantages that the United States, in specific the US Army, once dominated are now diminishing. In order to regain the initiative, the Army's Training and Doctrine Command (TRADOC) developed the Army Operating Concept, the Army Learning Concept, and the Human Dimension Concept. Innovation and adaptation are essential elements to each of these.

The Army Operating Concept specifically outlines a number of warfighting challenges to address in order for the Army to be prepared to win in a complex world. Consistent with the Army Operating Concept (AOC), the Army Capabilities Integration Center (ARCIC) developed 20 warfighting challenges specific to the US Army. The 10th warfighting challenge is to "how to develop agile, adaptive, and innovative leaders who thrive in conditions of uncertainty and chaos and are capable of visualizing, describing, directing, and leading and assessing operations in complex environments and against adaptive enemies" (Army Training and Doctrine Command 2010, 32). ARCIC determined that this challenge was an essential component in order for the operational Army to fight using the philosophy of mission command, which enables initiative through the art of command and the science of control. Furthermore, in order for the Army to effectively adopt this philosophy, the Army's operational forces needs the institutional side of the Army to indoctrinate the force.

According to Army Regulation 350-1, the institutional Army's primary capability for indoctrinating the officer force is though the Officer Education System (OES) (Department of the Army 2014, 96). OES includes officer training from pre-commissioning though general officer training. Significantly, there is a transition from direct level leadership to organization level leadership when officers are promoted from captain to major. To facilitate the transition, these captains selected for promotion must complete Intermediate Level Education (ILE) through the Command and General Staff College (CGSC).

"The Command and General Staff College (commonly referred to as CGSC) consists of three schools: the Command and General Staff School, the School for Advanced Military Studies, and the School for Command Preparation" (Command and General Staff College 2016, i). The Command and General Staff School (CGSS) consists primarily two types of the Command and General Staff Officer Course (CGSOC), both resident and non-resident.

CGSOC has the unique capability to prepare field grade officers to be effective organizational leaders. Effective organizational level leaders are capable of influencing well beyond those who they direct. The extent of influence reaches throughout an organization and impacts the climate and culture of the organization to include fostering or suffocating creative thought.

<u>Primary Research Question</u>

Given the imperatives of warfighting challenge #10 and the necessity of field grade officers to influence organizations, the Army needs an educational means for developing agile and adaptive field grade leaders that are both creative and foster creative

thinking throughout their organizations. This drives the primary research question, "does CGSOC foster creative thought for resident students?" If ILE is the primary Army capability for indoctrinating organizational leaders of mission command, then one should expect that CGSOC fosters creative thought for students. If it does, then it is much more likely that field grade officers are better equipped to foster creative thought in other organizations.

<div align="center">Secondary Research Questions</div>

In order to answer the primary question, "does CGSOC foster creative thought in resident students?" the answers to other questions need answered as well. Secondary research questions assist in acquiring a better understanding of what fosters creative thinking and how CGSOC measures up to that understanding.

The secondary research questions to be answered in this thesis are:

1. How do organizations foster creative thought?

2. How does doctrine and policy foster creative thought at CGSOC?

3. How does the CGSOC organizational structure and personnel foster creative thought?

4. How does the CGSOC training, leadership development and education foster creative thought?

5. How does the CGSOC facility foster innovative thought?

Answering the first question will lead to critical factors that impact creative thought. The remainder of the secondary research questions address the current state of CGSOC using a DOTMLPF-P analysis. DOTMLPF-P stands for doctrine, organizations, training, materiel, leadership and education, personnel, and facilities, and policy. This is

an analysis tool for force management which assists in identifying capability gaps when new requirements emerge. In this case, the requirement is for creative thinkers. The benefit of using this Joint and Army tool is that other researchers can use the methodology to be apply it to other organizations.

With the primary and secondary research questions established, the research must next carefully consider assumptions, limitations, and delimitations in order to complete a solid foundation for launching into research.

<u>Assumptions</u>

Assumptions are what researchers consciously accept to be true in order to move forward with research. Making assumptions is critical to establishing a solid start point for the research to build upon. There are three of assumptions to note as they relate to the primary research question: "does CGSOC adequately foster creative thought for resident students?"

The first assumption is that Army majors play a pivotal role in fostering creative thinking at the organizational level across the US Army. This assumption justifies researching if CGSOC fosters creative thinking for students because CGSOC is the PME for a majority of new majors. It is a possibility that more senior officers in the Army can have a greater impact on fostering creativity, but this study will not attempt to reveal this answer.

The second assumption is that there is a positive correlation between fostering creativity and fostering creative thinking. While it is not necessary for a positive correlation between creativity and creative thinking, the assumption is that what fosters one can foster the other. Both terms are defined later in chapter 1, but it is necessary to

make this assumption up front so as to enable a comprehensive understanding of creative thinking.

The last assumption is that fostering creative thought in educational institutions is equivalent to fostering creative thought in other types of organizations. This assumption is necessary in order to expand research into mission oriented and business organizations. It is also important as it relates to the ability of students to replicate conditions to foster creativity in the other non-educational organizations they attend.

These assumptions effectively frame the foundation for the research. The next step in this process is to define the limitations and delimitations necessary to scope the research into something manageable.

<u>Limitations and Delimitations</u>

Limitations and delimitations establish the boundaries of the research. Limitations on research are the areas that the researcher cannot control whereas delimitations are the areas that the researcher sets as the boundaries of the research. The limitations to this research include the limited amount of recent and available published research on CGSOC and the researchers limited personal observations in his attendance as a student at CGSOC.

The delimitations of this study relate to methods of research, the content of research, scoping the research to a manageable size, and avoiding points of contention. As for methods of research, the research will only use readily available resources at the Ike Skelton Combined Arms Research Library (to include the library's sourced databases and the World Wide Web), the researcher's personal observations, and will not use surveys or interviews.

For the content, the research will only consider resident CGSOC (excluding satellite and distance learning CGSOC, use information on the current CGSOC curriculum, and current and/or recent (within the last 1-2 years) information about CGSOC. This research will also not present or analyze any planned or future changes to CGSOC.

In order to scope the DOTMLPF-P secondary research questions into manageable analysis, the researcher will consolidate these areas into four groups. Doctrine and policy are the first group. Organizational structure and personnel are the second group. Training, leader development, and education are the third group. Lastly, facilities is the fourth group. Furthermore, the material area will not be considered because it is not relevant to this study.

Finally, this thesis will not argue whether CGSOC conducts training, education, or leader development. The researcher will only consider training, leader development and education collectively. The purpose of this thesis is to understand if CGSOC fosters creative thinking, not to argue training versus leader development versus education. In truth, there are elements of all three of these in almost every block of instruction at CGSOC. Even the joint policy for officer joint professional education states that "training and education are not mutually exclusive" and that "virtually all military schools and professional development programs include elements of both education and training in their academic programs" (Joint Staff 2009, A-2).

<center>Key Terms</center>

Key definitions and terms are what the researcher needs the reader to understand in a particular way for this thesis to make sense. They enable effective communication and clarity in the context of this thesis.

Creativity: "the ability to produce work that is novel (i.e., original, unexpected), high in quality, and appropriate (i.e. useful, meets task constraints)" (Kaufman et al. 2005, 351).

Creative Thinking: "Both the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking" (Association of American Colleges and Universities 2016).

Joint Concept: "Links strategic guidance to the development and employment of future joint force capabilities and serve as "engines for transformation" that may ultimately lead to doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) and policy changes" (Joint Chiefs of Staff 2015, 126).

<center>Chapter Conclusion</center>

This thesis suggests that leaders need to be able to think creatively in order for the US Army to be successful in application of current Joint and Army concepts developed out of the a challenging strategic environment. By establishing assumptions, limitations, and delimitations, the researcher sets the framework of the research in order to answer secondary research questions and ultimately the primary research question: "does CGSOC foster creative thought for resident students?" In the next chapter, chapter 2, the

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researcher will provide a review of research on creativity, determine the critical factors

that fosters creative thinking, and provide any past research on creative thinking within

CGSOC.

CHAPTER 2

LITERATURE REVIEW

Introduction

We further can describe the person as having a motivational pattern that is more
or less typical of creative individuals, or even as having background variables that
more or less dispose that person to think creatively.
— Sternberg, Lubart, Kaufman, and Pretz, "Chapter 15: Creativity"

The literature review sets the stage for answering the primary research question:

"does CGSOC foster creative thinking in resident students?" In this literature review, the

researcher will provide an overview of literature on (1) how CGSOC fosters creative

thinking; (2) the concepts of creativity and creative thinking; (3) a description of the

critical factors that foster creative thinking; and (4) Army research on creative thinking. It

is also necessary to answer the first secondary research question: "how do organizations

foster creative thought?" in the literature review because it enables the researcher to

screen content relevant to the other secondary research questions. Finally, by providing a

review of research on CGSOC, the research shows how this study is unique and builds

upon past research.

Overview of Research on CGSOC Fostering Creative Thinking

The researcher found no recently published studies on CGSOC, CGSC, or CGSS

fostering creative thinking. The closest study found to this topic was a monograph from

2012 entitled "Fort Leavenworth and its Education Legacy; Recommendations for ILE,"

by Lieutenant Colonel James D. Sisemore. Yet, he only went as far as stating that ILE

trains creative thinking skills, uses a teaching methodology to emphasize creative

thinking (Sisemore 2012, 11), and that group exercises emphasize creative thinking (Sisemore 2012, 59).

Lastly, Sisemore referenced *Preparing Field Grade Leaders for Today and Tomorrow* from 2006, by Brigadier General Volney Warner and Dr. James Willbanks. Considering that this article was written in 2006, most of the content on creative thinking still remains applicable. Not surprisingly, this article puts an emphasis on creative thinking for students, states that CGSC adjusted its approach to account for creative thinking, and that CGSC made developing creative thinking officers as an outcome of the course (Seismore 2012, 107).

What the researcher did find specific to CGSOC and relevant to this thesis were unpublished documents that CGSOC developed internally for self-evaluation. These include an evaluation of how CGSOC integrates the Army Warfighting Challenges and a comparison of joint primary military education (JPME) requirements to CGSOC's learning objectives. The evaluation for Army Warfighting Challenge #10 is in appendix A. While this challenge does not directly mention creative thinking, the US Army already made the connection at the Solarium conferences and within the AOC as discussed in chapter 1. The researcher discusses the connection in further detail later in this chapter with the definitions of creative thinking.

Appendix A depicts an assessment of how well CGSOC's practical exercises and the common core course integrate the Army Warfighting Challenges. Challenge #10 is met through specific classes to the level of analysis, comprehension, application, and synthesis.

Another CGSOC chart the researcher found does a comparison of joint primary military education learning areas and terminal learning objectives as shown on the chart below.

COMMON CORE AY2015	2. Develop critical and creative thinking skills.	3.5 Establish a unit climate that fosters development of leaders who think critically and creatively.
JPME ↓		
2. Learning Area 2 – Joint Doctrine and Concepts		
c. Apply solutions to operational problems in a volatile, uncertain, complex or ambiguous environment using critical thinking, operational art, and current joint doctrine.		**X**
6. Learning Area 6 – Joint Operational Leadership and the Profession of Arms		
b. Comprehend critical thinking and decisionmaking skills needed to anticipate and recognize change, lead transitions, and anticipate/ adapt to surprise and uncertainty .	**X**	**X**
f. Analyze the importance of adaptation and innovation on military planning and operations.	**X**	

Figure 1.   Creative Thinking within JMPE and Learning Objectives

Source: Command and General Staff College, "AY 2015 CC JPME vs TLOs vs GLOs Summary" (Fort Leavenworth, KS, 2015), 1.

This chart shows how creative thinking skills are developed through the Joint Operational Leadership and Profession of Arms Learning Area 6 as well as fostering creative thinking skills though the Joint Doctrine and Concepts Learning Area 2.

These Learning Areas derive from the Chairman of the Joint Chiefs of Staff Instructional 1800.01D: *Officer Professional Military Education Policy* which also states that "[i]nherent in this level is development of an officer's analytic capabilities and

creative thought processes" (Joint Staff 2011, A-A-4). This policy "distributes the policies, procedures, objectives, and responsibilities for officer professional military education (PME) and joint officer professional military education (JPME)." This is one of the Chairman's responsibilities derived from title 10, USC, section 153(a)(5)(C) (Joint Staff 2011, 1). Thus CGSOC is required to teach and foster creative thinking because these requirements are part of JPME Level I rooted in law. This legal requirement is not taken lightly either. CGSOC is subject to Joint Staff accreditation and periodic review in order to ensure that the officers that attend CGSOC are eligible to receive JPME Level I credit.

The CGSOC learning requirements derived from laws as part of OPMEP, ARCIC's army warfighting challenges, the monograph on ILE, and the article on transforming CGSC all show that CGSOC students need to be capable of thinking creatively. But, this research falls short of providing the details in how and what CGSOC does to foster creative thinking. To determine how and what CGSOC does to foster creative thinking, the researcher must start with an explanation of creativity and creative thinking.

Overview of Creativity

In order to achieve a deeper understanding of creative thinking, the researcher will provide some definitions, creative approaches, and a model for creative achievement.

Defining the Terms: Creativity and Creative Thinking

Providing definitions of creativity and creative thinking enables a common understanding while preventing disagreements to the foundation of this research.

"Creativity is the ability to produce work that is novel (i.e., original, unexpected), high in quality, and appropriate (i.e. useful, meets task constraints)" (Kaufman et al. 2005, 351). One would then infer that creative thought refers to thinking that results in novel (innovative or adaptive) applicable ways, yet variations exist in the definition.

The first definition for creative thinking was provided in chapter 1's key terms section: "Both the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking" (Association of American Colleges and Universities 2016).

The US Army captures creative thinking in both doctrine and concepts. "Creative thinking involves thinking in innovative ways while capitalizing on imagination, insight, and novel ideas." Furthermore, "a key concept for creative thinking is developing new ideas and approaches to accomplish missions. Creative thinking uses adaptive approaches (drawing from previous circumstances) or innovative approaches (developing completely new ideas)" (Department of the Army 2012, 5-2).

The US Army Operating Concept: Win in a Complex World describes creative thinking in terms of innovation and adaptability. "Innovation is the result of critical and creative thinking and the conversion of new ideas into valued outcomes" (Training and Doctrine Command 2014, 22). Adaptability on the other hand, is taking current ideas and modifying them to respond "to new needs or changes without a loss of functionality" (Training and Doctrine Command 2014, 21).

Finally, CGSOC provides a "hybrid definition" for creative thinking in the C123 Creative Thinking Class: "creative thinking is developing new ideas and approaches of

value–using adaptive and innovative approaches developed from imagination, insight, and novel ideas" (Command and General Staff College 2015c). As depicted in figure 3, this definition combines the concepts from ADRP 6-22 and from the Army Operating Concept.

Figure 2.   C123 Creative Thinking

Source: Command and General Staff College, "C123 Curriculum Slides" (Command and General Staff College, Fort Leavenworth, KS, 2015), 14.

Approaches

Cambridge University provides ten main approaches to the origins of creativity. These approaches come from conscious, unconscious, external, or a combination of factors resulting in creativity.

The unconscious approaches includes social-personality and psychoanalytic approaches. Psychoanalytic involves the psychoses, thus examples include dreaming and fantasizing (to include drug induced). Social-personality on the other hand relates to personality and motivational variables that result in creativity.

The conscious approaches include pragmatic, psychometric, cognitive, social-cognitive, and evolutionary. The pragmatic approach comes from the use of techniques to promote creativity; for example: brainstorming and mental modeling. The psychometric approach refers to divergent thinking. The cognitive approach "seeks understanding of the mental representations and processes underlying creative thought" (Kaufman et al 2005, 356). The social-cognitive or social-personality approach focuses "on personality variables, motivational variables, and the sociocultural environment as sources of creativity" (Kaufman et al. 2005, 358). Finally the evolutionary approach has to do with someone creating a new idea and then retains the idea in the event that it becomes useful later.

The only solely external approach is the mystical approach. This approach is the belief that creativity comes from some divinity.

Lastly, the combination type approaches include psychodynamic and confluence. The psychodynamic approach entails that "creativity arises from the tension between conscious reality and unconscious drives" (Kaufman et al 2005, 353). The confluence approach is when multiple components converge; these may include intrinsic motivation, domain-relevant knowledge and abilities, and creativity skills (Kaufman et al. 2005, 360). Teresa Amabile refers to this as the creativity intersection and a "multiplicative model

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that creativity will be highest in that area where the three components share their greatest overlap" (Amabile 1996, 260).

Model

In the White Paper entitled *Creativity in the Army: Creative Process, Creative People, and the Creative Climate*, the authors provide a model for achieving creativity. As stated in the title of the White Paper and depicted in the figure below, the major components of this model include the creative process, the creative person, and the climate.

Figure 3.   Component Model of Creative Achievement

Source: Human Dimension Capabilities Development Task Force, *Creativity in the Army: Creative Process, Creative People, and the Creative Climate* (Fort Leavenworth, KS: Combined Arms Center, 2015), 15.

The creative process represents "the sequence of thoughts and actions that lead to novel adaptive productions" (Human Dimension Capabilities Development Task Force 2015, 15). This process consists of four general steps including: problem identification,

preparation, response generation, and response validation and communication (Human Dimension Capabilities Development Task Force 2015, 16). Of note, to maximize creativity during the process requires new ideas during the problem identification and response generation phases (idea generation phase) (Amabile 1996, 260).

The people aspect to this model represents the individual and includes three main components that contribute to creative thinking: domain skills and knowledge, creative thinking skills and task motivation" (Amabile 1996, 84). "A person's domain-relevant knowledge and skills represent the essential building blocks from which creative ideas can be built" (Human Dimension Capabilities Development Task Force 2015, 24). These can either be innate or developed (Amabile 1996, 43). Domain skills are also referred to as expertise (or subject matter expertise) and "encompasses everything that a person knows and can do in the broad domain of his or her work" (Amabile 1998, 78).

Creative thinking skills are the individual's use of creativity-relevant skills, attributes, or processes (Human Dimension Capabilities Development Task Force 2015, 24). These fall into categories of personality traits, working styles, thinking styles, and knowledge of heuristics (Amabile 1989, 47-49). The figure below captures a number of researched different traits and styles discovered among a number of different sources.

Table 1.   Creative Thinking Styles

Personality Traits	Working Styles	Thinking Styles
Self-Discipline [1,4]	Dedication [1]	Breaking patterns of thought/perception [1,4]
Perseverance [1,3,4]	Ability to Concentrate for long durations [1,4]	Understanding Complexity [4]
Independence [1,4]	Ability to set aside or abandon ideas [1,4]	Keeping Options Open [1,4]
Tolerance to Uncertainty or Ambiguity [1,2,3,4]	Persistence in the face of Difficulty [1,4]	Suspending Judgement [1,4]
Non-Conformity [1,3]	Willingness to Work Hard [1,4]	Divergent Thinking [3]
Delayed Gratification [1,4]	High Level of Productivity [4]	Thinking Broadly [1,4]
Self Motivation [1,4]		Remote Association [3]
Willingness to Take Risk [1,2,3,4]		Remembering Accurately [1,4]
Self Efficacy [2]		High working memory capacity [3]
Ability to Overcome Obstacles [2]		Breaking Habits [1,4]
Absence of Sex-Role Stereotyping [4]		Perceive creatively or Freshly [1,4]
Internal Locus of Control [4]		Cognitive Flexibility [3]
		Other Tricks to thinking Differently [1]

[1] (Growing Up Creative, 47-49)
[2] (The Nature of Creativity, 89)
[3] (White Paper, 26)
[4] (Creativity in Context, 88-90)

Source: Developed by Researcher.

What is not represented in this figure are creative thinking heuristics. A heuristic can be defined as "any principle or device that contributes to a reduction in the average search to solution" (Amabile 1996, 89). Examples of this include methods such as brainstorming and mental modeling.

The last people component is task motivation (intrinsic and extrinsic), "that ultimately shape an individual's desire and approach to the task at hand" (Human Dimension Capabilities Development Task Force 2015, 22). In other words, motivation will determine what someone will actually do (Amabile 1998, 76). Intrinsic motivation comes from within an individual while extrinsic is external. While motivation can either be intrinsic or extrinsic, it also includes two elements: attitude towards a task and perceptions for completing the task (Amabile 1996, 91). An individual's attitude is based

on how well the task matches their interests. Perceptions on the other hand, "depend largely upon external social and environmental factors" (Amabile 1996, 92).

Intrinsic motivation is "the desire to do something for its own sake, because it is interesting, satisfying, or personally challenging" (Amabile 1989, 50). Research by Teresa Amabile suggests "that people rarely do truly creative work in an area unless they really love what they are doing and focus on the work rather than the potential rewards" (Sternberg 2006, 89). In the White Paper on creative thinking, the authors go on to say that three conditions usually increase intrinsic motivation. These include: the belief that an individual has a say in what or how a task is done, self-efficacy (the belief an individual believes in their own abilities), and that there is purpose in completing the task (Human Dimension Capabilities Development Task Force 2015, 23). Amabile also states that an individual's internal locus of evaluation, their self-evaluation, is more important than others' evaluation of their work (Amabile 1996, 91).

Amabile further hypothesized that extrinsic motivation was detrimental to creativity, but she did determine two means in which it can add to the creativity. These means include when extrinsic motivation supports intrinsic motivation and extrinsic motivation is support of the non-creative dominant phases of the creativity process (Amabile 1996, 259-260). Support to intrinsic motivation includes "reward, recognition, and feedback that confirm competence, as well as feedback that provides important information on how to improve competence" (Amabile 1996, 259). Also, when extrinsic motivation is used to increase individual involvement in the task at hand, this can also support intrinsic motivation. These can include work goals and rewards that enable the

other intrinsic motivation through the social environment (i.e. resources or time, autonomy).

Extrinsic motivation in support of the non-creative dominant phases, or motivation-work cycle match, does not directly result in creativity or creative thinking. What this does do is motivate the non-creative phases of the creativity process (preparation and response validation and communication). Because new ideas are typically not necessary during these phases, things such as deadlines, rewards, and recognition can keep individuals on track and enhance the value of the work so long as self-determination is intact (Amabile 1996, 260).

Stephen Brookfield in his book, *The Skillful Teacher*, advocates that aligning the rewards system is one of the ways to reinforce creativity because student behavior ties closely to the rewards system. "The familiar question, "is this on the test?" is perhaps the most obvious example of this" (Brookfield 2015, 127).

Creative processes and people are not enough though, "it must also have an organizational climate that is conductive to creativity and innovation for its creative people to actually achieve creative results" (Human Dimension Capabilities Development Task Force 2015, 31). This is the last piece of the model for creative achievement. Amabile describes the climate as the social environment and provides six environmental stimulants that foster creativity:

1. Organizational Encouragement: this includes a culture that promotes creativity, rewards and recognition for creativity, process for integrating and implementing new ideas, open flow of ideas, and a shared vision of the organizational purpose (Amabile 1996, 233). This may also include the

organization's tolerance of risk. (Human Dimension Capabilities

Development Task Force 2015, 32).

2. Supervisory Encouragement: "a supervisor who serves as a good work model, sets goals appropriately, supports the work group, values individual contributions, and shows confidence in the work group" (Amabile 1996, 233).

3. Work Group Support: this represents the design of a diverse group with the appropriate skills to task, supports communication and collaboration, trust and support each other, and committed to the work. (Amabile 1996, 233)

4. Freedom: or autonomy, is the ability to decide what to do or how to do it. (Amabile 1996, 233)

5. Sufficient Resources: can be time, money, materials, or information to do the work. (Amabile 1996, 233)

6. Challenging Work: is "the degree that the work is challenging to the employee and deemed by the employee to be important" (Human Dimension Capabilities Development Task Force 2015, 32).

The next step is to determine which areas of creative thinking organizations can use to foster creative thinking.

<center>Critical Factors in Fostering Creative Thinking</center>

Organizations can foster creative thinking through domain skills, creative thinking skills, the social environment, extrinsic motivation, and the creative process. These are to be considered the critical factors in fostering creative thought.

These factors derive from the components of the model for achieving creativity: the process, the people, and the social environment. As for the process, organizations can

foster creative thinking by integrating creative processes into their current processes that are relevant.

For the people, organizations can invest in both domain skill and creative thinking skills to foster creative thinking. Of the creative thinking skills category, heuristics and thinking styles can be taught. Working styles and personality traits really cannot be taught, but can be reinforced or encouraged so long as rewards are not the motivation to think creatively (not during problem identification or response generation). Extrinsic motivation can also be used to support intrinsic motivation and during the non-creative components of the creative process.

Organizations can foster creativity thinking though the social environment by impacting intrinsic motivation. These methods include: enabling autonomy, teaching the leadership style encouragement, providing challenging assignments curtailed to the individual, providing resources during creative processes, assembling work groups to maximize diversity and free and open communications, and ensuring the entire organization supports creative thinking through recognition.

Organizations foster creative thinking through domain and creative thinking skills, use of the creative thinking process, aligning the social environment to support intrinsic motivation, and use of extrinsic motivation mechanisms. Understanding these methods was necessary to determine the critical factors in fostering creative thinking.

<u>Chapter Conclusion</u>

The research uncovers that CGSOC has a joint requirement to develop creative thinking in officers and foster their creative thinking because it is specified as learning requirements for CGSOC as part of JPME I. Furthermore, CGSOC faculty are assessing

their course learning objectives to ARCIC's warfighting challenges. These two things only further reinforce the justification for this thesis.

Finally, research shows that organizations can effectively foster creative thinking for individuals. With the critical factors in fostering creative thinking, the researcher now has a way to answer the other secondary research questions in the effort of answering the primary research question: "does CGSOC foster creative thinking in resident students?" Before moving to the next secondary research questions, the researcher needs to present with chapter 3 the logical method to use for the conduct of this thesis.

CHAPTER 3

METHODOLOGY

The world leaders in innovation and creativity will also be world leaders in
everything else.

— Harold R. McAlindon

Introduction

In order to answer the primary research question: "does CGSOC foster creative

thought for resident students?" and the associated secondary questions, multiple research

methods will be necessary. These are to include: (1) a literature review of fostering

creative thinking; (2) the application of screening criteria to CGSOC as relating to

fostering creative thinking; (3) assessing the screened data by the critical factors that

impact creative thinking; (4) the application of evaluation criteria; and lastly (5) an

analysis of the results. An aggregate of the analysis should answer the primary research

question.

The sequencing of methods shall provide a logical progression in which to answer

the secondary research questions and ultimately the primary research question. The

following sections will address the literature review, the screening criteria, the evaluation

criteria, the analysis of results, and also the recognized threats to validity and bias.

Literature Review of Creativity

Conducting a literature review will be necessary to build upon any past research

on creative thinking in CGSOC and to determine the critical factors in fostering creative

thinking. The literature review for this thesis will answer the secondary research question: "how do organizations foster creative thought?"

With the ability to understand how organizations can foster creative thinking, the researcher will be able to move forward and evaluate CGSOC. The next things the researcher will need to consider are the different areas of CGSOC in order for the researcher to be able to develop screening criteria.

<u>The Application of Screening Criteria</u>

Determining the screening criteria will focus which specific areas of CGSOC to evaluate. As this will be a study of a military organization, it is only fitting that the researcher uses a military concept for defining these areas. In both joint and Army Doctrines, staffs determine capability requirements by using the DOTMLPF framework. The concept the researcher will use is DOTMLPF-P.

DOTMLPF refers to the areas of doctrine, organization, material, leadership development, personnel, and facilities. Joint Publication 1-02 establishes DOTMLPF and DOTMLPF-P as acronyms in reference to joint concepts (see definition in "Terms" in chapter 1). "Joint concepts are intended to guide all Joint Force development processes, ultimately leading to changes in doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy" (DOTMLPF-P) (Joint Chiefs of Staff 2013, A-3).

The intent of the DOTMLPF framework shall be to analyze these areas for how current capabilities compare to current requirements. By using this, the researcher will be able to determine capability gaps based on requirements, make recommendations for adjustment or change to one or more of these areas. The design of this framework will

work particularly well as it present gaps in capabilities which are the grounds for conclusions and recommendations to this research.

Because this is a study of an US Army school that is required by law to teach joint doctrine and a joint policy stipulating that creative thinking is a necessary attribute, the researcher will use the joint DOTMLPF framework which includes policy (DOTMLPF-P). An adapted DOTMLPF-P framework will be used as the context of the remainder of the secondary research questions:

1. How does doctrine and policy foster creative thought at CGSOC?

2. How does the CGSOC organizational structure and personnel foster creative thought?

3. How does the CGSOC training, leadership development and education foster creative thought?

4. How does the CGSOC facility foster innovative thought?

As per the limitations and delimitations stated in chapter 1, the researcher will combine training, leader development and education so as not to detract from this study on fostering creative thinking. Doctrine and policy and organizational structure and personnel will also be grouped to consolidate analysis.

While the researcher will answer each of these questions in chapter 4 with the presentation of data, the underlying task will be to understand how these secondary questions impact the critical factors in fostering creative thinking. Next, the criteria for evaluating the critical factors will be defined.

Application of Evaluation Criteria

The researcher will need evaluation criteria in order to assess the screened data and enable answering the primary research question: "does CGSOC foster creative thinking in resident students?" The evaluation criteria will be a level of integration. A low level of integration will means that the findings in a category have limited positive impact in fostering creative thought. A moderate level of integration will mean that the findings in a category have moderate positive impact in fostering creative thinking. A high level of integration will mean that the findings in a category have the highest positive impact in fostering creative thinking. Because the primary research question requires a yes or no answer, no integration will also be a possibility.

The researcher will explain and rationalize the screened DOTMLPF-P data by critical factor to the level integration to the fostering of creative thinking. Table 3. "Response Evaluation Criteria," will provide the layout of how the researcher builds the assessment in order aggregate the findings.

Fundamentally, the researcher's method includes both qualitative and quantitative analysis. It is qualitative because while the researcher presents objective information, the researcher will use subjective assessments to determinate levels of integration. It is also quantitative because the researcher will assign a numerical value to the different levels of integration in order to aggregate the results and provide an overall assessment.

Table 2.   Critical Factor Response Evaluation Criteria

Critical Factors to Creative Thinking	Response Evaluation Criteria			
	No Integration (0 points)	Low Level of Integration (1 point)	Moderate Level of Integration (2 point)	High Level of Integration (3 point)
1) Domain Skills				
2) Creative Thinking Skills				
3) Social Environment				
4) Extrinsic Motivation				
5) Creative Processes				

Source: Developed by author

Analysis of the Results

By summing the points of all the different levels of integration, the researcher will determine the overall level of integration and answer the primary research question: "does CGSOC foster creative thinking in resident students?"

Research Method

The following is the step by step approach the researcher will use for the conduct of this thesis.

Step 1: Conduct a literature review of how organizations can foster creative thought. Chapter 2.

Step 2: Apply screening criteria to CGSOC DOTMLPF-P as applicable to fostering creative thought and present results. Chapter 4.

Step 3: Assess the data using the critical factors that foster creative thinking and analyze based on the evaluation criteria. Chapter 4.

Step 4: Aggregate the results. Chapter 4.

Step 5: Draw conclusions and make recommendations. Chapter 5.

Threats to Validity and Biases

It is crucial that the threats to validity and biases be established, acknowledged, and mitigated whenever possible, prior to presenting data and analysis. Threats to validity include anything that might cause the research to be logically or factually untrue. On the other hand, bias pertains to factors that cause the researcher to favor one point of view over the others.

Potential threats to validity for this thesis include the researcher's ability to assess material, changes in curriculum, and only considering CGSOC documentation, self-studies, and the researcher's observations. The researcher's ability to assess material in specific to how it relates to defined evaluation criteria is a threat to validity because although the intent is to justify assessments based on qualitative analysis, there is still some subjectivity; this is also a bias. Changes in curriculum impact validity because of the frequency with which they occur. Adjustments happen annually, although they range from slight to moderate. This research may then be valid anywhere from the year of this study to the next ten years or longer. Finally, there is a significant threat to validity by only analyzing CGSOC documents, self-studies, and personal observation and not conducting interviews or surveys. Again the researcher clarifies his intent of only using these measures in the limitations and delimitations in chapter 1.

Cognitive biases to this thesis derive primarily from the researcher himself and the researcher's committee. The personal biases include the researcher's military occupational specialty (MOS) code, personal experiences, and status as a student. The researcher is a signal corps officer with the MOS code of 25A. This is relevant because of the potential biases that relate to the researcher's area of specialty, training, and assigned positions which can be vastly different among students at CGSOC. Different backgrounds lead to different observations, understandings, and experiences while at CGSOC.

The fact that the researcher is a student attending CGSOC is also a significant bias since the student's perspective is one of many in the school. Other perspectives within CGSOC include teaching teams, curriculum writers, other faculty, and leadership. To that effect, the researcher has a bias to that of his specific teaching team. While CGSOC designed teaching teams to be composed of representatives from the various departments, the individuals on those teams each have their own biases and perspectives which they naturally impart to the students in their staff group(s).

The final biases to take into account are those of the committee members evaluating this thesis. Each member of the committee is an instructor at CGSOC, and their purpose is to provide perspective and direction to the researcher. Similar to the teaching team, each committee member has their own perspectives, opinions and thought processes. Therefore each committee member has the potential to influence the researcher through their provided feedback, guidance, and overall shaping of the thesis.

Chapter Conclusion

Having established the method of design for this research, and provided the biases and threats to validity, the researcher can now proceed to chapter 4, whereupon the presentation and analysis of the data (according to the screening and evaluation criteria) can be completed. In chapter 4, the researcher will answer the remaining secondary research questions which will ultimately answer the primary research question of "does CGSOC foster creative thinking for resident students?"

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

Since we live in an age of innovation, a practical education must prepare a man
for work that does not yet exist and cannot yet be clearly defined.
— Peter F. Drucker

Introduction

This chapter contains a presentation of the data researched in order to answer the

remaining secondary research questions and then an analysis of the data to ultimately

answer the primary research question: "does CGSOC foster creative thinking for resident

students?" The method the researcher used requires the step-by-step approach as

described in chapter 3.

Step 1: Results of the Literature Review

The literature review led to answering the first secondary research question: "how

do organizations foster creative thought?" Organizations foster creative thought by

integrating the critical factors that lead to individual creativity and include: domain skills,

creative thinking skills, social environment, external motivation, and the creative process.

Understanding these factors is essential to the remaining secondary research questions.

Step 2: Application of Screening Criteria

By using the DOTMLPF-P gap analysis framework, the research provides a

holistic review of areas to assess. The adapted DOTMLPF-P framework is the basis for

the remaining secondary questions:

1. How does doctrine and policy foster creative thought at CGSOC?

2. How does the CGSOC organizational structure and personnel foster creative thought?

3. How does the CGSOC training, leadership development and education foster creative thought?

4. How does the CGSOC facility foster innovative thought?

Each of these areas must now be considered individually and assessed according to the critical factors in fostering creative thinking.

Doctrine and Policy

ADRP 1-02 defines Army doctrine as the "fundamental principles, with supporting tactics, techniques, procedures, and terms and symbols, used for the conduct of operations and which the operating force, and elements of the institutional Army that directly support operations, guide their actions in support of national objectives" (Department of the Army 2015, 1-28). Similarly, the Joint Staff describes doctrine as consisting of "the fundamental principles that guide the employment of U.S. military forces in coordinated action toward a common objective" (Joint Chiefs of Staff 2013, A-3).

Determining CGSOC's doctrine can be confusing because CGSOC instructs using a wide range of US Army and Joint doctrine, yet these principles are not CGSOC's major guiding principles for instruction. CGSOC's fundamental principles for instruction include the Army Learning Model, outcome based criteria, the adult learning model, and academic freedom.

TRADOC redefined the Army Learning Model in TRADOC Pamphlet 525-8-2, *The US Army Learning Concept*. The previous model was a Venn diagram including operational, institution, and self-development. While the old model is still the foundation of the new model, the new model is also continuous, adaptive and accounts for 21st Century Soldier Competencies and a Learner-Centric Environment (Army Training and Doctrine Command 2011, 16).

Of the competencies, "Lifelong Learner," "Teamwork and Collaboration," and "Tactical and Technical Competence" standout for fostering creative thinking. Collaboration can indirectly foster the trust necessary in the social environment. Likewise, lifelong learning and competence support domain skills.

The Learner-Centric Environment impacts creative thinking through assessments, self-structured learning, and peer-based learning. Assessments tie in directly with outcome based curricula which provides feedback to competency which supports intrinsic motivation. Even further, one of CGSOC's core course outcomes is that officers "are critical and creative thinkers who can adapt and thrive in ambiguous and ever-changing environments" (Doughty and Kem 2015, 6).

Self-structured learning is where individuals "continually seek information and want their information needs gratified immediately" (Army Training and Doctrine Command 2011, 22). While CGSOC does not specifically identify this as part of its doctrine, it is encouraged and facilitated through resources provide to students as part of practical exercises. This has a dual impact on building domain skills and the social environment as part of intrinsic motivation through encouragement.

The last, the learner-centric environment consideration is peer-based learning. *The Army Learning Concept for 2015* describes this as the outcome of access to trusted people via information technology. While CGSOC students inherently have this ability, the school also directly uses this method through its staff group structure and the experimental learning model. The resulting trust is a social environment factor.

The experimental learning model (ELM) serves "as the dominant teaching methodology for delivering curriculum" (Doughty and Kem 2015, 1) as part of the adult learning model. "Adult learning is promoted when the learner's prior knowledge is activated prior to learning new knowledge" (Army Training and Doctrine Command 2011, 14). The ELM was developed by Dr. David A. Kolb and encompasses concrete experience, reflective observation, abstract conceptualization, and active experimentation (Doughty and Kem 2015, 1). CGSOC uses this model by enabling trusted students and faculty to share experiences within their individual staff groups. This method reinforces openness and instructor encouragement supporting the social environment.

CGSOC also reinforces the principle of academic freedom, "the commitment to freedom of expression and the pursuit of truth both students and faculty" (Command and General Staff College 2016, 21). For students, this comes from learning about critical and creative thinking in the C120 block course. For instructors, it is through their "initial instructor certification course, known as Faculty Development Phase I, which emphasizes facilitation of open-ended discussion with students" (Command and General Staff College 2016, 21-22). This principle positively impacts the social environment. Further discussion of C100 and faculty development is in the "Training, Leader Development and Education" section. The researcher considered policy next.

"Policy can direct, assign tasks, prescribe desired capabilities, and provide guidance for ensuring the Armed Forces of the United States are prepared to perform their assigned roles" (Joint Chiefs of Staff 2013, A-5). Since neither US Army nor Joint doctrine clearly define the term policy, the researcher will use a common definition. Oxford dictionary defines policy as "a course or principle of action adopted or proposed by a government, party, business, or individual." For the US Army, established policy augments other established rules and regulations in order to align purpose and direction of organizational missions. In considering the policies that impacts fostering creative thinking at CGSOC for students in, the researcher must review and analyze Joint and CGSC policies.

The main Joint Policy impacting CGSOC students in fostering creative thinking is the Chairman of the Joint Chiefs of Staff Instructional 1800.01D: *Officer Professional Military Education Policy (OPMEP)*. This policy provides instruction on "the policies, procedures, objectives, and responsibilities for officer professional military education (OPME) and JPME" (Joint Chiefs of Staff 2009, 1).

> Intermediate education focuses on warfighting within the context of operational art. Students expand their understanding of joint force deployment and employment at the operational and tactical levels of war. They gain a better understanding of joint and Service perspectives. Inherent in this level is development of an officer's analytic capabilities and creative thought processes. In addition to continuing development of their joint warfighting expertise, they are introduced to joint plans, national military strategy, joint doctrine, joint command and control, and joint force requirements. (Joint Chiefs of Staff 2009, A-A-4)

This policy reinforces the importance of developing an officer's creative thought processes with "JPME I Learning Areas Supported Area 6b: Comprehend critical thinking and decision-making skills needed to implement change and sustain innovation"

(Joint Staff 2009, E-C-3). CGSOC integrates this requirement primarily by using creative processes in numerous courses and instructing on creative thinking in the C100 course.

Of a dozen or so CGSC policy letters or memorandum, three stand out that have an impact on the critical factors in creative thinking. These include the CGSC Academic Ethics Policy (Bulletin No. 920), the CGSC Performance, Graduation and Awards Policies and Procedures (Bulletin No. 903), and the CGSS Policy for Student Portfolios (Memorandum No. 14).

The Academic Ethics Policy supports extrinsic motivation and the social environment. Extrinsic motivation comes through punishment if students fail to adhere to school's ethical policy in terms of cheating, conducting legitimate research, and attributing credit to sources. To make it even clearer to students of the importance if this policy, "at the beginning of each academic year, students sign a formal Academic Ethics Policy Memorandum of Acknowledgement of the terms of the Academic Ethics Policy" (Command and General Staff College 2016, 14).

The ethics policy also includes a non-attribution clause or sub-policy doing two things: encouraging freedom of expression and protecting students, faculty, and guest speakers' thoughts, ideas, and words. This results in fostering creative thinking through trust and openness in the social environment. While it may be a stretch to say that when guest speakers come to CGSC and brief the CGSOC student body of over 1300 they directly foster creative thinking, it is relevant to instructors and students because of the typical ratio of 1 instructor to 16 students for any given block of instruction. Furthermore, following guest speaker presentations, CGSOC builds a "wrap around" discussion

afterwards that is also at the 1/16 ratio. The "wrap around" itself is a mechanism for generating ideas and thus supports the creative process.

The Academics Performance, Graduation, and Awards Policies and Procedure mainly utilizes extrinsic motivation by rewarding performance through grades. "To graduate, all students must satisfactorily demonstrate achieving the learning objective for the enrolled program of study as demonstrated by an overall grade point average of 3.00 or higher" (Command and General Staff College 2013, 1). This is relevant because instructors provide feedback of creative competence thus indirectly supporting intrinsic motivation.

The performance policy also includes academic repercussions and awards. "Any student failing to meet established graduation standards will neither graduate nor have his or her military record reflect successful completion of the program of study" (Command and General Staff College 2013, 2). Conversely, students showing superior academic achievements may be eligible for one of three CGSC awards and up to 20 percent of students may be considered for "Exceeding Course Standards" on their Academic Evaluation Report (Command and General Staff College 2013, 8). Neither repercussion nor awards foster creative thinking.

The Student Portfolio Policy fosters domain skills through the use of individual development plans. This policy supplements the CGSOC requirement of staff group advisors (SGA) to counsel students throughout the academic year. In doing so, this policy can support the social environment from the faculty's advisement and encouragement.

Organization Structure and Personnel

Understanding the organizational structure is important in the DOTMLPF-P gap analysis because the structure aligns personnel capabilities to resources to the mission or task at hand. With new requirements, "once validated, these new approaches may necessitate changes in the way the Joint Force organizes to accomplish missions, execute functions, and deliver, support, or sustain joint warfighting capabilities" (Joint Chiefs of Staff 2013, A-3). The most significant organizational structure areas that impact students at CGSOC are the faculty and the students themselves.

The faculty is broken down into departments of specialty, curriculum authors, and other support organizations. The departments include: the Department of Military History (DMH); the Department of Command and Leadership (DCL); the Department of Joint, Interagency, and Multinational Operations (DJIMO); the Department of Tactics (DTAC); and the Department of Logistics and Resource Operations (DLRO). These departments establish teaching teams with representation from each department for every student section of about 64 students. "The organization into teams fosters a sense of collaboration and shared instructional purpose among the members of the faculty team" (Command and General Staff College 2016, vi-vii).

Each student section consists of four staff groups of about 16 students each. The staff groups each have a dedicated DTAC and DJIMO instructor. Two DLRO, one DMH, and one DCL instructors then cover down on the entire student section. One of the instructors per staff group is also a SGA and one of the instructors per the entire section is a section leader. "This structure combines experts in the profession of arms with experienced academics to provide a comprehensive approach for the College leadership

to deliver purpose, direction, and guidance to the subordinate schools" (Command and General Staff College 2016, 78).

Of the other support organizations within CGSOC, the Learning Resource Center (LRC) is of particular to note. "The LRC provides workshops, one-on-one coaching, and on-line resources to improve CGSC students' writing skills, verbal communication / presentation skills, study skills and time management" (Command and General Staff College 2016, 45). This support organizational is for the students to use as they desire in order to improve themselves.

The CGSOC organizational structure supports the critical factors of domain skills and social environment. Domain skills comes from the alignment of instructors by department to students by using teaching teams. Support to the social environment comes from openness enabled by organization of the students in the staff groups and indirectly from the fostered collaboration and a shared purpose from teaching teams. SGA encouragement, resources, and organizational support from the Learning Resource Center also support the social environment. The personnel area is next.

"The personnel component of DOTMLPF-P refers to the individuals required in either a military or civilian capacity to accomplish an assigned mission" (Joint Chiefs of Staff 2013, A-5). In CGSOC's case, the researcher considered both the students and the faculty.

For the students "the selection process ensures that CGSC attendees represent the most qualified officers among those of their rank and years of service who are most competitive for future prestigious assignments and promotion in their respective services" (Command and General Staff College 2016, 59-60). While the student body consists

primarily of US Army officers in the rank of Captain (promotable) or Major, all the US Department of Defense branches of service (US Navy, US Marine Corps, US Air Force, and US Coast Guard) are represented. Furthermore, a significant number of international army officers also attend; enough for one or two international students per staff group. Lastly, other US government agencies are also able to send a few personnel to attend the course.

The make-up of the US Army officers includes a variety of MOS codes or branches, typically a minimum of 10 years of service, all three components (Active, Guard, and Reserve), and experiences may include company command and or battalion staff (Command and General Staff College 2016, iv).

Selection for resident CGSOC is up to the service component and is highly competitive for US Army officers. Despite the fact that all officers must complete CGSOC in order to be eligible for promotion to lieutenant colonel, in the last two classes, only the top fifty percent of officers in consideration were selected. Selection is conducted at the Department of the Army level and those with the most promotion and potential are selected. 10 years of service along with superior performance or potential is a sign of experience, but it does not directly equate into expertise in domain skills.

Expertise would need to be assessed individually from the student body, because every officer has a different background. At worst, a US Army officer has a low amount of domain skills in his or her branch or specialty prior to attending CGSOC. The expectation is that the officers have company grade experience and must be instructed on how to be a field grade officer.

Resident CGSOC is not the only way to meet the requirements for promotion; selection though is a positive reinforcement for past performance (or negative for non-selects). Still selection does not mean individuals want to attend or want to be experts in the areas instructed at CGSOC. If selected and an officer wishes not to attend for whatever reason, the officer must get approval from the Vice Chief of Staff of the US Army which is a disincentive to request not to attend CGSOC. Also, the other non-resident (to include the other US branches and international Army schools) options for ILE/CGSOC are to go to a satellite school with a condensed timeline to learn the same material or distance learning with no face to face instruction on top of still having a full time position in an Army organization. Thus, the resident CGSOC has become the preference not just because of the school's prestige, but also because it is the best option to put forward the least amount of effort.

This impacts intrinsic motivation in two negative ways. First, this can mean that the individual is not up for the challenges of CGSOC. Second, students are dependent on each other's branch specific domain skills in contribution to the numerous group efforts. Individuals who are not intrinsically motivated will then have a negative impact on the rest of the group's motivation. Faculty is considered next.

Faculty come in two types: military and civilian. Military faculty are selected based on their experiences and must have graduated from CGSOC, equivalent or higher level of professional military education. Instructors are either in the rank of lieutenant colonel or major (competitive for promotion) and either eligible to command or previously commanded. Civilian instructors are typically either retired military officers or subject matter experts in their field (Command and General Staff College 2016, 62). The

level of experience of both civilians and military instructors has a high impact on domain skills which can foster creative thinking.

Training, Leader Development, and Education

These combined categories refer to the content and outcomes of instruction and/or exercises. Further, these areas apply to both instructors and students. For the students, the researcher considered the different courses and options. Courses include: preparatory courses, the core course, advanced operations course, and electives. Other student options include the Masters in Military Arts and Science (MMAS) program and the scholars programs. Finally, the researcher included faculty development because of the impact it can have on the different critical factors and students.

CGSOC hosts four preparatory classes including P910 for international students, P920 for all incoming students, P930 for non-branch, functional area officers, P940 for special operations forces (Command and General Staff College 2016, 45), and a writing skills improvement program for select officers. P910 focuses on terminology, doctrine, and planning processes. P920 provides "basic Army concepts and refresher training on basic Army doctrine, logistics, tactics and decision making" (Command and General Staff College 2016, 45). P930 instructs doctors, lawyers, and chaplain types Army tactics and logistics. P940 is "refresher training and specialized instruction on SOF doctrine and employment. The writing skills improvement program is a two-week workshop in which about 80 officers are selected to attend based on a diagnostic essay that all students must write. As far as fostering creative thinking, at the least all these preparatory classes lay the foundation for building domain skills. It is also safe to say that every course at

CGSOC builds some domain skills on what is being instructed. This does not mean expertise in a domain though.

The core and advanced operations courses have a total of 17 sub-courses. Of these, 11 include in their grading rubrics an evaluation of applying creative thinking. This is extrinsic motivation through rewarding of grades based on writing for tests, essays, or class participation in exercises. Three of the sub-courses have learning outcomes that develop critical and creative thinking skills or incorporate creative thinking skills (C100, O200, and O300). Two specific classes in C100 need a closer look.

C100 Foundations, a 60 hour course, is of particular note because it includes instruction on critical and creative thinking and it is the first course of CGSOC that all students must take. C123 Creative Thinking, a two hour class in this block, "introduces creative thinking and addresses two specific components, enhancers to creative thinking and barriers to creative thinking…this lesson is designed to enhance awareness in how creative thinking is encouraged, as well as to enhance awareness in how creative thinking is discouraged" (Command and General Staff College 2015a, 1).

C124 (Diagnosing Impediments to Critical and Creative Thinking), is a second two hour class on analyzing "two of the most significant impediments to critical and creative thinking-fallacies and biases. This lesson also introduces the concept of metacognition and how it is used to help improve critical and creative thinking" (Command and General Staff College 2015b, 1). These two classes directly contribute to creative thinking skills by teaching heuristics and thinking styles.

As far as supporting the creative process, both core and advanced operations courses use Army processes that align with problem identification and generating options

(the two phases that require creative thinking). Army processes include a problem solving process, Army Design Methodology (ADM), and the Military Decision Making Process (MDMP). Joint process include Operational Design and the Joint Operations Planning Process (JOPP).

Students must use these processes during a number of classes. In C125–Problem Solving and C126–Gaza Strip Exercises, students spend seven hours in learning and applying the Army's problem solving process.

Students learn and use ADM in C400–Army Doctrine and Planning, O200– Decisive Action: Division Operations, and O300–Decisive Action: Brigade Operations. Furthermore, 12 hours are dedicated to instruction of ADM and over 44 hours are for practical use of ADM (O399). ADM is also evaluated on the O300 exam which then supports extrinsic motivation.

Students are also instructed on and must use MDMP in the same courses as ADM (C400, O200, and O300). In C400 alone, 38 hours is dedicated to a practical exercise of MDMP. Students spend 32 hours conducting MDMP in O200 and have to individually develop a course of action which requires the creative thinking phase "generate options." O300 also has students apply MDMP for another 38 hours.

The joint doctrinal equivalent to ADM is operational design. The C500– Operational Art and Joint Planning–sub course provides 12 hours to instructing students on operational design. This is further reinforced by the C500 exam and JTF planning exercise which requires individuals to implement design. Finally, in O100–Combined Forces Land Component Command Planning Operations, students must use operational design as part of the planning exercise in O199.

JOPP is the joint equivalent to the Army's MDMP. In C500 students receive 30 hours of instruction and practical exercises using JOPP. Then during O100, students are required to also use JOPP for 42 hours during O199.

Included in all these sub-courses are classes intended to build domain skills in different specialty areas. These are a broad array of subjects in order to give students the tools they need to conduct planning and problem solving. Instruction is significantly focused on warfighting functions (Maneuver or Movement and Maneuver, Intelligence, Mission Command, Protection, Fires, and sustainment). This focus contributes to subject matter expertise for officers branched as armor, infantry, intelligence, logistics, and fires. The last group of courses for CGSOC students is the electives.

There are hundreds of electives available for students to choose to take during two electives periods during the last two months of CGSOC. The electives foster creative thinking through the social environment and expertise in domain skills. Students are free to choose which electives they take providing that the class is not full at the time of enrollment and that for certain classes, instructor permission is required. While this is not exactly autonomy, it does allow students to follow their interests. CGSOC requires students to complete eight elective sub-courses (or the equivalent hours) thus using extrinsic motivation, but because this is not in support of intrinsic motivation or the creative process, it does not support fostering creative thinking.

Through the conduct of the electives classes students gain additional subject matter expertise. Also, for those interested and willing to put forth the effort, they can earn an additional skill identifier, certificate, or recognized language credit specifically for US Army officers which further support domain skills. The core, advanced

operations, and electives courses are the major components to CGSOC, but there are also

a few noteworthy programs that are available to students to consider. These include the

MMAS and the Scholars programs. One caveat on the Scholars programs is that all

students are afforded the opportunity to apply for the programs, but very few are selected.

The MMAS program is offered free of charge to all resident CGOSC students. It

"engages students in collecting, analyzing, and communicating information; in mastering

modes of inquiry or creative work; and in developing skills adaptable to changing

environments" (Command and General Staff College 2016, 32). This program fosters

creative thinking through intrinsic and extrinsic motivation and domain skills.

Extrinsic motivation comes through the receipt of a master's degree. The research

itself leads to greater domain skills with the literature review in a thesis a display of

subject matter expertise. Intrinsic motivation comes through challenge, encouragement,

resources, organizational support and autonomy. Students have autonomy by CGOSC

allowing them to choose any topic within military arts and science to research.

Encouragement comes from committees and instructors and they further support

autonomy by advising students to research a topic of great interest.

CGSOC supports the MMAS program by providing an elective class on research

methodologies (A211), a class of sharing research methods and findings with other

students (A211), and two classes worth of credits to working on the thesis during the

general electives periods (A231). Finally the amount of time and effort that goes into the

thesis, oral defense, and comprehensive exam provides an individual challenge.

The scholars programs that CGSOC offers are different from year to year based

on the abilities and drive of instructors. These programs "offer a small number of selected

officers a chance to participate in intensive, graduate-level seminars and conduct in-depth primary-source research leading to a MMAS thesis of publishable quality" (Command and General Staff College 2016, 36). One of the reasons for the creation of the scholars programs was that a small percentage of students were not challenged enough by the curriculum of CGSOC. The scholars programs, while only serving a select few, fosters creative thinking in students identical to the MMAS program. The difference being that it is curtailed to students with even higher abilities and skills. Thus theoretically, creative thinking should occur at higher levels in the scholars programs than anywhere else at CGSOC.

Some consideration now must be given to the faculty, specifically: autonomy in the classroom and faculty training. The instructors rely on curriculum developers for the curriculum and then select instructors get tasked to write the specific lesson plans. Between the curriculum and lesson plans, little is left to an instructor in what and slightly less in how to teach. Some of the lesson plans allow for some autonomy with the methods of instruction. "CGSC faculty members have latitude in how they conduct classroom instruction to achieve the learning objectives and outcomes" (Command and General Staff College 2016, 67). In some cases, lesson plans can also go to the extent of providing alternate approaches to instruction. This fosters creative thinking in students because if instructors also have the interpersonal and judgmental skills, they configure practical exercises to be both challenging on the individual level and facilitate the right work group features.

This category also needs to consider the faculty's training or education because the faculty are one of the institution's main instruments in fostering the climate and

culture at CGSOC. "All faculty must complete the same Faculty Development certification" (Command and General Staff College 2016, 27). The Faculty Development Program (FDP) includes four phases and an Advanced Faculty Development every 3-5 years (Command and General Staff College 2016, 39-40). FDP 1, 2, and the advanced phase are required for all faculty; FDP 3 is for course authors and curriculum developers; and FDP phase 4 is voluntary. Of note, FDP 1 integrates CGSC's commitment to freedom of expression and emphasizes facilitation of open-ended discussion with students (Command and General Staff College 2016, 21). FDP 4 allows instructors to master teaching skills, supporting technologies, and subject matter expertise. Lastly, the advanced FDP reinforces the experiential learning model, freedom of expression, and truth in teaching and learning (Command and General Staff College 2016, 21-22). The impact of the FDP is a positive influence in faculty domain skills and the social environment of both students and instructors.

Facilities

ADRP 1-02 defines a facility as "a real property entity consisting of one or more of the following: a building, a structure, a utility system, pavement, and underlying land" (1-33). From the joint perspective, "key facilities include command installations and industrial facilities of primary importance to the support of military operations or military production programs" (Joint Chiefs of Staff 2013, A-5). CGSOC facilities include: the Lewis and Clark Center, the Ike Skelton Combined Arms Research Library, and parking lots in the vicinity of those buildings.

The Lewis and Clark Center has classrooms, a cafeteria, non-secure internet protocol router network (NIPR), Mission Command Network, commercial wireless

internet, restrooms, and offices for faculty by department or support organization. Of note, "each [classroom] is configured in the same manner: a horseshoe-shaped room with 16 work stations and one instructor station, SmartBoard technology, two large screen TVs, and DVD-R" (Command and General Staff College 2016, 49). Classrooms support some reconfiguration of desks and a stow-away wall transforming two classrooms of 16 desks to one classroom of 32 desks which can combine two staff groups into a half section. On the third floor of the Lewis and Clark Center, there is also a lounge area that enables some discussion outside of the classroom yet it really isn't enough to accommodate the student population.

There is also wireless internet throughout the entire building, as well as the library. "Mission Command Network (MCNet) enhances student learning conditions by closely approximating conditions in operational units through providing many of the same software command and management tools used by operational units around the world" (Command and General Staff College 2016, 49).

The CGSOC facilities foster the social environment to the half section level through open and collaborative classrooms and the cafeteria. The library facility also enables the library materiel, the Learning Resource Center, and research assistance which indirectly fosters students gaining domain skills.

Step 3: Critical Factor Assessment and Weighting

This step provides a qualitative assessment based on the evaluation criteria of each of the critical factors in facilitating creative thinking at CGSOC. By completing this step, the researcher will be able to aggregate the results in order to answer the primary research question.

Domain Skills

Domain skills foster creative thinking at CGSOC across all four areas: doctrine and policy, organizational structure and personnel, training and leader development and education, and facilities. The level at which CGSOC supports domain skills or subject matter expertise based on the DOTMLPF-P analysis is moderate.

Each area contributes to domain skills. The doctrine and policy area through the 21st Century Competencies with lifelong learning, and tactical and technical competence; the learner centric environment encouraging self-structured learning that can be applied in practical exercises; and the student portfolio policy making students create individual development plans. The organizational structure and personnel area contributes with the alignment of instructors by department to students by using teaching teams, expert instructors, staff group diversity and student experts. The training, leader development, and education area adds to the domain skills of both students across the course and faculty with the FDPs. Finally even the library facility can add to domain skills with the resource center and wide variety of research material.

While all the areas integrate domain skills, these efforts also have limits. CGSOC's focus increases domain skills across all courses specific to maneuver, fires, intelligence, and logistics, but for students with other MOS codes domain skills instructed at CGSOC do not develop subject matter expertise in their field. Some students do come as experts and foster creativity especially the doctors, lawyers, and chaplains, but a good portion of the other officer specialty areas do not because officer experiences focus on leadership and broadening. The electives can, and do increase domain skills especially for the ASI producing tracks, but since the electives are at the end of the entire course, they

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do not foster as much creative thinking as they could if put at the beginning or even in the middle. Finally, there are limited mechanisms to direct students to subject matter expertise in their fields. It is left up to the military and civilian instructors in different MOSs or backgrounds as representatives to provide consistent guidance. Quality guidance depended appeared to be the exception and not the standard.

Table 3.   Expertise Response Evaluation Criteria Analysis

Critical Factor to Creative Thinking	Response Evaluation Criteria			
	No Integration (0 points)	Low Level of Integration (1 point)	Moderate Level of Integration (2 point)	High Level of Integration (3 point)
1) Domain Skills	-	-	X	-

Source: Developed by author

Creative Thinking Skills

CGSOC uses creative thinking skills to foster creative thinking only in the training, leader development, and education area. The level at which CGSOC integrates creative thinking skills based on the DOTMLPF-P analysis is low. This assessment is based on that while there are 4 hours of instruction on creative thinking, according to the advance sheets, the intent of the two classes is to "enhance awareness in how creative thinking is encouraged, as well as to enhance awareness in how creative thinking is discouraged" (Command and General Staff College 2015a, 1) and "analyze two of the most significant impediments to critical and creative thinking-fallacies and biases"

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(Command and General Staff College 2015b, 1). The actual instruction on creative

thinking skills and styles is very limited.

Table 4.   Creative Thinking Skills Evaluation Criteria Analysis

Critical Factor to Creative Thinking	Response Evaluation Criteria			
	No Integration (0 points)	Low Level of Integration (1 point)	Moderate Level of Integration (2 point)	High Level of Integration (3 point)
2) Creative Thinking Skills	-	X	-	-

Source: Developed by author

Social Environment

CGSOC's use of the social environment fosters creative thinking across all four

areas: doctrine and policy, organizational structure and personnel, training, leader

development, education, and facilities. The level at which CGSOC supports the social

environment for students based on the DOTMLPF-P analysis is moderate. To explain this

assessment, it is necessary to understand how the different DOTMLPF-P areas factor into

the different aspects of the social environment that contribute to intrinsic motivation.

As discussed in the literature review, the social environment contributes to

intrinsic motivation through individual challenges, autonomy, resources, work group

dynamics, supervisor encouragement, and organizational support.

CGSOC provides individual challenges through the core and advanced course

curriculum, the electives, and the MMAS and scholars programs. For the courses of

CGSOC (core and advanced operations), the curriculum is set equally for all students.

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The only flexibility is when instructors assign staff roles to the students during all the practical exercises. This allows the instructors to develop the students in leadership roles as well as different staff roles as the instructors saw fit. Weaker students are typically kept in their specialty areas while stronger students gain experience within their specialty, other specialties, and leadership areas. This effectively aligns individuals to challenges. The only time challenges are mismatched is when students do not care enough to put forth the amount of effort necessary to meet the challenges, whether it be for individual assignments or group practical exercises.

Challenges within the electives are debatable. Some electives, such as the ASI rewarding sequence of classes, are especially challenging for those students interested and/or willing to complete them. On the other hand, some electives are completely based on class participation and students seek these classes out specifically because they are not challenging. The MMAS and scholars programs provide adequate challenges because the students must apply for the programs and the programs are designed to challenge the small percentage of students willing to put forth a significant amount of extra work.

The most autonomy that exists at CGSOC is with the MMAS and scholars programs. Students are encouraged to pick an MMAS topic from their personal interests, must generally follow a thesis format, and have the freedom to make their own timeline so long as progress is made to complete the thesis in time for graduation from CGSOC. The scholars programs typically include the MMAS thesis requirement and thus embed that same autonomy. Outside of these programs, autonomy is significantly limited with the exception of some open ended discussions and choice in the elective classes.

When considering resources and organizational encouragement for students, the major contributors are time, the learning resource center, and access to subject matter expertise within the faculty. Time is the most significant of these and nests with the some 250 hours allocated to creative processes inside of practical exercises. The learning resource center and experts among the faculty also provide students with the ability to refine their understanding of problems and/or to improve in domain skills. Additional resourcing is available at CGSOC, but typically at the faculty level as opposed to the students. These are mainly in funding for programs like the MMAS, scholars, and some electives.

CGSOC puts a significant amount of effort in accommodating for work group features. The teaching teams, classrooms and the cafeteria contribute to collaboration. Peer based learning and wrap around discussions build trust in students. Finally, the experiential learning, academic freedom, staff group organization, wrap around discussions, and FDP all enhance openness amongst student staff groups. While all four areas directly contribute to the work group features, a potential shortcoming is in the personnel with the selection of students to attend CGSOC. Any students who attend CGSOC but are not willing to meet the challenges significantly negatively impact the work group features.

Regardless of whether faculty supervisors, specifically the instructors on teaching teams, are effective in their encouragement, it is clear that the CGSOC position is that faculty are expected to do it. Encouragement for all students comes from self-structured learning, experiential learning model, wrap around discussions, and counseling sessions.

When analyzing for how the four DOTMLPF-P categories contribute to the six components of the social environment, the amount of efforts does not equate to effectiveness and some drawbacks are also present. This is the basis for a moderate assessment of the social environment.

Table 5.   Social Environment Evaluation Criteria Analysis

Critical Factor to Creative Thinking	Response Evaluation Criteria			
	No Integration (0 points)	Low Level of Integration (1 point)	Moderate Level of Integration (2 point)	High Level of Integration (3 point)
3) Social Environment	-	-	X	-

Source: Developed by author

Extrinsic Motivation

CGSOC's use of extrinsic motivation has mixed results in fostering creative thinking. The level at which CGSOC supports extrinsic motivation in students based on the DOTMLPF-P analysis is low. Recall that extrinsic motivation most effectively fosters creative thinking when it reinforces intrinsic motivation or when it is in use during the parts of the creative process that do not rely on creative thinking (Amabile 1998, 260-261). Extrinsic motivation outside of these uses can take away from intrinsic motivation to the detriment of creative thinking. Extrinsic motivation is found in two areas: doctrine and policy and training and leader development and education.

The most effective use of extrinsic motivation to foster creative thinking comes from the use of grading course requirements, the ASI programs, and the MMAS program.

The use of grades for individual work, contrition to learning, and contribution to practical exercises provides feedback to students. The feedback from grades fosters creative thinking by reinforcing domain skills, creative thinking skills, or the social environment. This is especially in the case for classes where creative thinking is a learning objective.

The awards policies, MMAS and ASI programs are also extrinsic motivators which positively impact creative thinking because they reward competency in domain skills. The MMAS program also does so for the creative processes.

CGSOC uses extrinsic motivation in other areas with a no positive impact to creative thinking, these include: the ethics and awards policies, graduation requirements, and the academic evaluation report (AER). This is primarily due to a disconnect with the creative process and intrinsic motivation. The AER has the most potential for a positive impact to foster creative thinking due to feedback in competencies, but because the AER rewards the top 20 percent of students it puts the students in direct competition with each other. The AER represents all CGSOC courses, thus it is somewhat removed from the creative processes and can result in only a low impact to fostering creative thinking. This impact is arguably a positive or negative impact.

The low assessment of extrinsic motivation is because of feedback as part of instructor grading and because CGSOC does not use extrinsic motivation to support the non-creative components in the creative process.

Table 6.   Extrinsic Motivation Evaluation Criteria Analysis

	Response Evaluation Criteria			
Critical Factor to Creative Thinking	No Integration (0 points)	Low Level of Integration (1 point)	Moderate Level of Integration (2 point)	High Level of Integration (3 point)
4) Extrinsic Motivation	-	X	-	-

Source: Developed by author

Creative Processes

CGSOC utilizes creative processes to foster creative thinking in two areas: doctrine and policy and training and leader development and education. The level at which CGSOC integrates creative processes for students is high.

This assessment is based on what CGSOC does and what it does not do. CGSOC teaches the US Army's creative processes, provides three individual student assignments requiring the use of creative processes, and makes students use creative processes during practical exercises. In total CGSOC allocates almost 250 hours to learning and practical application which includes creative processes through the majority of the core and advanced operations courses.

What CSGOC does not do is very minimal and the extent of the impact cannot be assessed with the methods of this research. This drawback comes from not every student being involved in the creative processes in every practical exercises. While instructors assign student positions and leadership, the student leaders manage the work load. This results in a spectrum of proficiency in the practice of the creative process. CGSOC mitigates this gap in the group setting though individual assessments.

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The "wrap around" discussions following guest speaker presentations also supports the creative process. The impact of the "wrap around" may appear negligible compared the time spent in practical exercises, but these discussions provide a different venue across a dozen or so topics. This significantly increases the breadth of areas of interest and creates a high likelihood to engage every student in the creative process at least for one topic.

Table 7.   Creative Processes Evaluation Criteria Analysis

Critical Factor to Creative Thinking	Response Evaluation Criteria			
	No Integration (0 points)	Low Level of Integration (1 point)	Moderate Level of Integration (2 point)	High Level of Integration (3 point)
5) Creative Processes	-	-	-	X

Source: Developed by author

Step 4: Analysis of the results

With the assessment of the critical factors complete, the researcher can now aggregate the results and present the findings. The totals of the response evaluation criteria result in the answer the primary research question.

Table 8.   Aggregate Evaluation Criteria Analysis

Critical Factor to Creative Thinking	Response Evaluation Criteria			
	No Integration (0 points)	Low Level of Integration (1 point)	Moderate Level of Integration (2 point)	High Level of Integration (3 point)
1) Domain Skills	-	-	X	-
2) Creative Thinking Skills	-	X	-	-
3) Social Environment	-	-	X	-
4) Extrinsic Motivation	-	X		-
5) Creative Process	-	-	-	X
Totals	0	2	4	3

Source: Developed by author

The findings of the response evaluation criteria show that CGSOC moderately fosters creative thinking in resident students when considering totals. In light of the other response criteria, this is not an overwhelming finding. Only one of the critical factors is at the high level of integration while two are at the low level of integration. One other significant finding is that every critical factor is assessed with some level of integration.

Step 5: Draw conclusions and make recommendations

The last step in the researcher's method is to draw conclusions and make recommendations. This will be presented in chapter 5.

Chapter Conclusion

Does CGSOC foster creative thinking in resident students? The answer is yes, however this is not overwhelming and CGSOC can make improvements. The data

presentation and analysis show that CGSOC supports all five of the critical factors in

fostering creative thinking to varying degrees. The researcher will discuss the conclusions

and recommendations inferred from the presentation of data and analysis in chapter 5.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The only thing tougher than getting a new idea into a military mind is getting an old one out.

— Sir Basil H. Liddell Hart, *Thoughts on War*

Introduction

This study covered the depth of creative thinking over the breadth of DOTMLPF-P to answer the primary research question: "does CGSOC foster creative thinking in resident students?" While the answer to this question is yes, this is not the sole outcome of the research. The analysis also enabled me to draw conclusions based on the findings and make justifiable recommendations in order to assist decision makers and further the body of knowledge.

Conclusions of the Study

This study determines overall that CGSOC moderately fosters creative thinking for resident students. A closer look shows that CGSOC integrates the different critical factors of creative thinking to various degrees. Another way of putting it is that the critical factors to fostering creative thinking are out of balance. When considering the confluence of domain skills, creative thinking skills, and intrinsic motivation as fostered through the social environment and extrinsic motivation, creative thinking can only reach as far as the weakest component: creative thinking skills. Extrinsic motivation is also assessed as low, but since I only considered it in support of intrinsic motivation and creative processes it thus does not have as significant an impact.

Some general conclusions about the CGSOC DOTMLPF-P areas that specifically help foster creative thinking include: the ASI, scholars, MMAS programs as well as the practical exercises. Furthermore, since CGSOC does foster some level of creative thinking, it can be inferred that field grade officers are better equipped as organizational level leaders to foster creative thought in other organizations. The conclusion that CGSOC is fostering creative thought in resident students is also important because this is essential to both US Army and joint concepts. Conclusions to this research also contribute to the Army Warfighting Challenges.

Conclusions for Army Warfighting Challenge #10

ARCIC provides seven learning demands that accompany Army Warfighting Challenge #10–"how to develop agile, adaptive, and innovative leaders who thrive in conditions of uncertainty and chaos and are capable of visualizing, describing, directing, and leading and assessing operations in complex environments and against adaptive enemies" (Army Capabilities Integration Center 2016). Of these, I determined this thesis supports conclusions to three of the learning demands:

Learning Demand 2. "What are the requirements for the development of agile, adaptive, and innovative leaders?" The development of agile, adaptive, and innovative leaders requires leaders that can think creatively and can foster creative thinking in others at the direct and organizational levels. To fulfill this requirement, the Army needs to allocate time and resources it takes to develop expertise in domain skills of a certain field and creative thinking skills. A significant investment in individuals at Army PME will go a long way in fostering the critical factors to foster creative thinking.

Another requirement to develop leaders is to ensure that organizations within the Army maintain climates and cultures that foster creative thinking. This entails not only influencing the effects of the social environment, but also aligning extrinsic rewards to support intrinsic motivation and to support the non-creative components of its creative processes. The Army should also take a hard look at its use of extrinsic motivation to foster creative thinking to determine if these motivators are detrimental to creativity.

Learning Demand 4. "How can the Army assess required leader competencies that enable an agile, adaptive and innovative leader?" The Army can assess leader competencies that enable agile, adaptive and innovation at the organizational and the individual level. This thesis provides a template for assessing organizations through the use of DOTMLPF-P and the critical factors in fostering creative thinking. An organizational assessment of this nature might be similar to a command climate survey, but should also provide feedback for staffs and field grade leaders, not just commanders.

At the individual level, leader competencies can be assessed based on expertise in domain skills, creative thinking skills and styles, contribution to creative processes, and intrinsic motivation. Supervisor and organizational encouragement as part of these assessments can further reinforce the social environment in fostering creative thinking. Tools to assess individual competencies already exist in the Army in the form of evaluation reports, counseling forms, and qualification tests or evaluations. A supplement could be a survey type self-assessment coupled with a supervisor assessment of these skills, processes, and interests. The challenge is to focus on these areas and not on the successful ideas from creative thinking.

Learning Demand 7. "How can the Army support the development of "mutual trust" and cohesive teamwork in its units and organizations?" The Army can support the development of mutual trust in its units and organizations with the organizational assessments discussed above and a dialogue on autonomy with leaders. A dialogue on autonomy at any level is a starting point for building mutual trust. As relationships mature, autonomy and trust should grow. Some ways the Army can implement these methods is by integrating these concepts into Army policy, doctrine, leader development, education and training.

The Army can support the development of cohesive teams in its units and organizations best by aligning individual intrinsic motivations with the right organizations. This should be done with initial entry into the Army for both enlisted member's MOS assignments and officer accessions. Re-assessments should also be done periodically; officers have the ability to self-re-assess and re-align their interests by changing MOS with a current program, the Volunteer Transition Incentive Program. Human Resources Command also has a role and should attempt to take intrinsic motivation into account in personnel assignments to better align people to missions, broadening assignments, and professional development.

<u>Recommendations</u>

Based on these conclusions, recommendations for the future can be made. These recommendations include those for decision makers as well as recommendations for future research.

Recommendations for Decision Makers

I have multiple recommendations based on my analysis and conclusions in this thesis for decision makers at CGSOC. In order to improve CGSOC's ability to foster creative thinking, CGSOC should address the low and moderately assessed critical factors through changes in the areas of training, leader development, and education, personnel, and policy. The first area for recommendations is training, leader development, and education area.

CGSOC can improve upon training, leader development and education with an overall effort and efforts aimed at creative thinking skills, domain skills, and the social environment. An overall effort to improve across all the lacking critical factors in fostering creative thinking is for CGSOC to emphasize these areas in the faculty development program. If an instructor or SGA fails to understand these areas and the confluence of domain skills, creative thinking skills, and intrinsic motivation, it can be detrimental to a student's and/or entire staff group's ability to think creatively and foster creative thinking in other organizations. Furthermore, if CGSOC wants concepts like creative thinking to stick with students, students should be able to apply the concept of fostering creative thinking throughout the entire course. This would require CGSOC to reinforce this concept especially during the creative processes students are required to use.

Creative thinking skills should be a priority effort because it has the lowest assessment and because of the confluence of domain skills, creative thinking skills, and intrinsic motivation. CGSOC could add a class on creative thinking skills and styles to

the C100 course and in the C123 class, include the other critical factors to fostering creative thinking as discussed in this thesis.

For improving domain skills in this area, CGSOC should put either one or both of the electives periods at the beginning of CGSOC because of the amount of expertise developed during electives. By developing expertise in electives at the beginning of CGSOC, students are able to apply those skills throughout the core and advanced operations courses which heavily rely on creative processes during practical exercises.

To address the social environment factor, the teaching teams could provide feedback to the students as part of the after action reviews to the practical exercises and/or during individual counseling sessions. This feedback should clarify how and why the instructors selected students for their assigned practical exercise positions. This is an opportunity for instructors to repeatedly reinforce the importance of fostering creative thinking, in this case specifically how the social environment impacts intrinsic motivation. Instructors could require students to submit their interests, domain skills, and development goals in attempt to facilitate these in some fashion during the course. They should also provide feedback to students on their domain and creativity skills.

Finally, I strongly recommend that the article: "How to Kill Creativity," by Teresa Amabile, be included as a learning concept in class on fostering creative thinking or leadership. This article was my personal intrinsic motivation for this thesis because of how it relates to organizational level leadership.

For the personnel area, my recommendations have to do with intrinsic motivation and domain skills. To best facilitate intrinsic motivation, students should not go to CGSOC if they do not want to nor if they are not interested in learning about the US

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Army. The CGSOC students who are not aligned to their intrinsic motivators can become detrimental to staff groups. CGSOC should make an effort to reach out to potential candidates to inform them about what it is that students do and are expected of prior to student's submitting their preference lists. US Army screening policy for student selection should go beyond performance and potential. It should at least consider a portion of students for their subject matter expertise in the domain skills they are supposed to have.

On the other hand, the vast majority of US Army officers that attend resident CGSOC are branch officers (i.e. infantry, armor, aviation, special forces, signal corps, engineers, military intelligence, adjutant general, field artillery, and logistics). If feasible, CGSOC should attempt to integrate more functional area officers who are trained in a much more specialized fashion from the satellite or distance learning courses. By adding more subject matter expertise to the practical exercises, not only can this add to domain skills, but it is also more realistic in the way the Army organizational force is manned.

I also recommend a policy change so as to prevent ignorant or deliberate misalignment of extrinsic motivation to foster creative thinking. Specifically, CGSOC should consider establishing a policy to ensure that extrinsic rewards are not countering intrinsic motivation. Additionally, CGSOC could add to its Academic Ethics Policy to include the importance of how openness, trust, encouragement, and organizational support impact creative thinking.

If CGSOC were to approve these recommendations, CGSOC would improve upon its overall fostering of creative thinking in resident students. This enables students

and faculty to better understand the importance of creative thinking and impact other organizational cultures and climates to foster creative thinking.

Recommendations for Future Research

The research I completed in support of this thesis triggered my curiosity in a number of different areas that were either out of reach or scope of this research of which I recommend for future research.

First, I recommend a more quantitative analysis on my primary research question; "does CGOSC foster creative thinking for resident students?" Given adequate time and resources, I would have done a quantitative analysis of CGSOC students and staff groups in an attempt to validate the research and provide more solid data in order to better support the conclusions and recommendations of this thesis. I recommend conducting student surveys and interviews on intrinsic and extrinsic motivation in an effort to determine if CGSOC motivates students to be creative thinkers. Additionally, I recommend researching how effective CGSOC students are in fostering creative thinking at organizations after CGSOC. Answering this question gets at whether what is taught and fostered is learned in the short and long term.

My curiosities out of scope related to the topic of creative thinking are personality assessments and critical thinking. I recommend future research on if there is a correlation between personality assessments and creative thinking in US Army officers. Connecting the results of personality type assessments could provide valuable information as to what types of people the US Army should recruit, retain, or promote in order to best develop agile and adaptive leaders. The other area is critical thinking.

The more talked about partner to creative thinking is critical thinking. This study only focused on creative thinking, but organizations need to foster both types in order to make the best decisions for the future. This is because while creative thinking can generate new, valuable ideas, organizations need critical thinking in order to leverage these new ideas into successful change. Thus, I also recommend for future research to study fostering the confluence of critical and creative thinking for students.

Final Thoughts

Answering the strategic and operational challenges of a complex environment requires solutions that impact both individuals and organizations. Developing creative thinking leaders at CGSOC may be the key. For the academic institution that CGSC claims to be, it would behoove the organization to take a vested interest in not only answering the Army Warfighting Challenges, but also adapting itself to the conclusions of those answers.

> Without change there is no innovation, creativity, or incentive for improvement. Those who initiate change will have a better opportunity to manage the change that is inevitable.
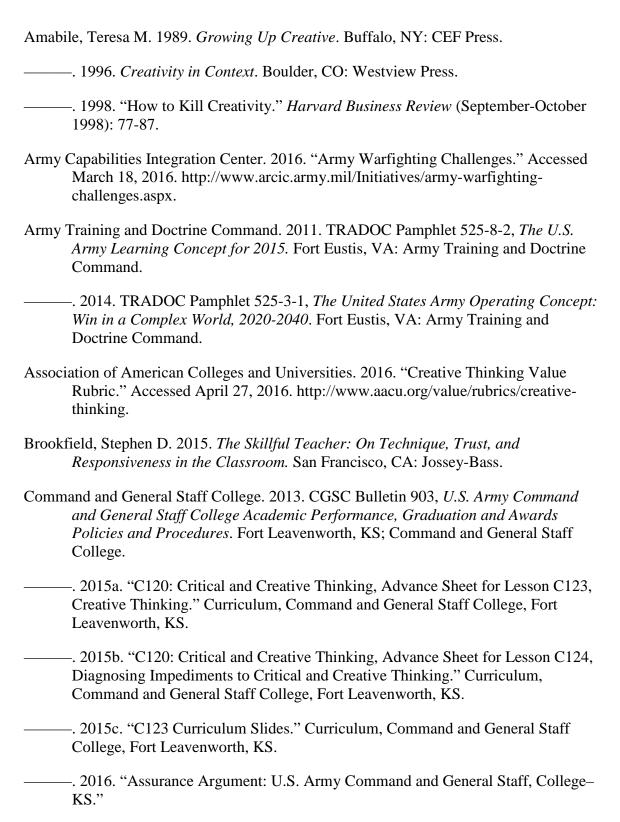
— William Pollard

APPENDIX A

ARMY OPERATING CONCEPT VS COMMON CORE & TRAINING SCENARIOS

Action	Supported by GAAT & other Scenarios	Common Core Summary	C100	C200	C300	C400	C500	E100	F100	H100	L100
6. Conduct homeland operations to defend the Nation against emerging threats.						B: Comp	B: Comp				
7. Assure uninterrupted access to critical communications and information links (satellite communications; position, navigation, and timing; and intelligence, surveillance, and reconnaissance) when operating in a contested, congested, and competitive environment.											B: Synthe
8. Train Soldiers and leaders to ensure they are prepared to accomplish the mission across the range of military operations while operating in complex environments against determined, adaptive enemy organization.					B: Comp	B: Applicat	B: Applicat				
9. Develop resilient Soldiers, adaptive leaders, and cohesive teams committed to the Army professional ethic that are capable of accomplishing the mission in environments of uncertainty and persistent danger.			B: Synthe		B: Comp	B: Applicat	B: Applicat	M: Comp			B: Synthe
10. Develop agile, adaptive and innovative leaders who thrive in conditions of uncertainty and chaos, and are capable of visualizing, describing, directing, leading, and assessing operations in complex environments and against adaptive enemies.			B: Analys		B: Comp	B: Applicat	B: Applicat		B: Comp		
11. Conduct effective air-ground combined arms reconnaissance to develop the situation in close contact with the enemy and civilian populations.						B: Applicat	B: Applicat				
12. Project forces, conduct forcible and early entry, and transition rapidly to offensive operations to ensure access and seize the initiative.							B: Applicat		B: Comp		

Source: Command and General Staff College, 2015d. "Army Operating Brief."

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